

# Trends in Asthma Mortality and Hospitalization in Detroit, Michigan, 1990-1996.

Wahl RL, Hogan J, Wilcox KR, Reeves M, Lyon-Callo S.  
Poster Presented at the Centers for Disease Control  
and Prevention, A Public Health Response to  
Asthma Conference, Atlanta, GA. Feb 9-11, 1999.

# Abstract

- **Background:** The objective of this analysis was to describe temporal trends of childhood asthma mortality and hospitalization in Detroit from 1990 through 1996.
- **Methods:** Asthma deaths and hospitalizations (ICD-9-CM 493) in children (one to 14 years) were identified from state-level databases. Trends in race, gender, and age-specific asthma-related deaths and hospitalizations were calculated.
- **Results:** The number and rate of asthma-related hospitalizations increased from 1990 through 1996 by 60% and 11%, respectively. The hospitalization rate for Detroit children was three times higher than the rest of the State. Within Detroit, both the mortality and hospitalization rates for African-American children were twice that of white children. Hospitalization rates were twice as high in males as females.
- **Conclusions:** From 1990 to 1996, childhood asthma-related hospitalizations increased in Detroit. Hospitalization and death were twice as likely to occur in African-American children. This study illustrates the high asthma burden, especially in African-American children in the city of Detroit.

# Introduction - Asthma

- Worldwide increase in prevalence over last 20 years
- Affects 14-15 million people in the US each year
- Prevalence and mortality in US nonwhites are 4 and 2 times higher than US whites
- Most common chronic illness in children and most common cause of school absences
- Michigan and Detroit children
  - **Recent increases in hospitalizations and hospitalization rates have been observed, especially in African-American children in Detroit**
- Objectives
  - **Describe temporal trends of childhood asthma (ages 1-14) hospitalization and mortality in Detroit from 1990 through 1996**

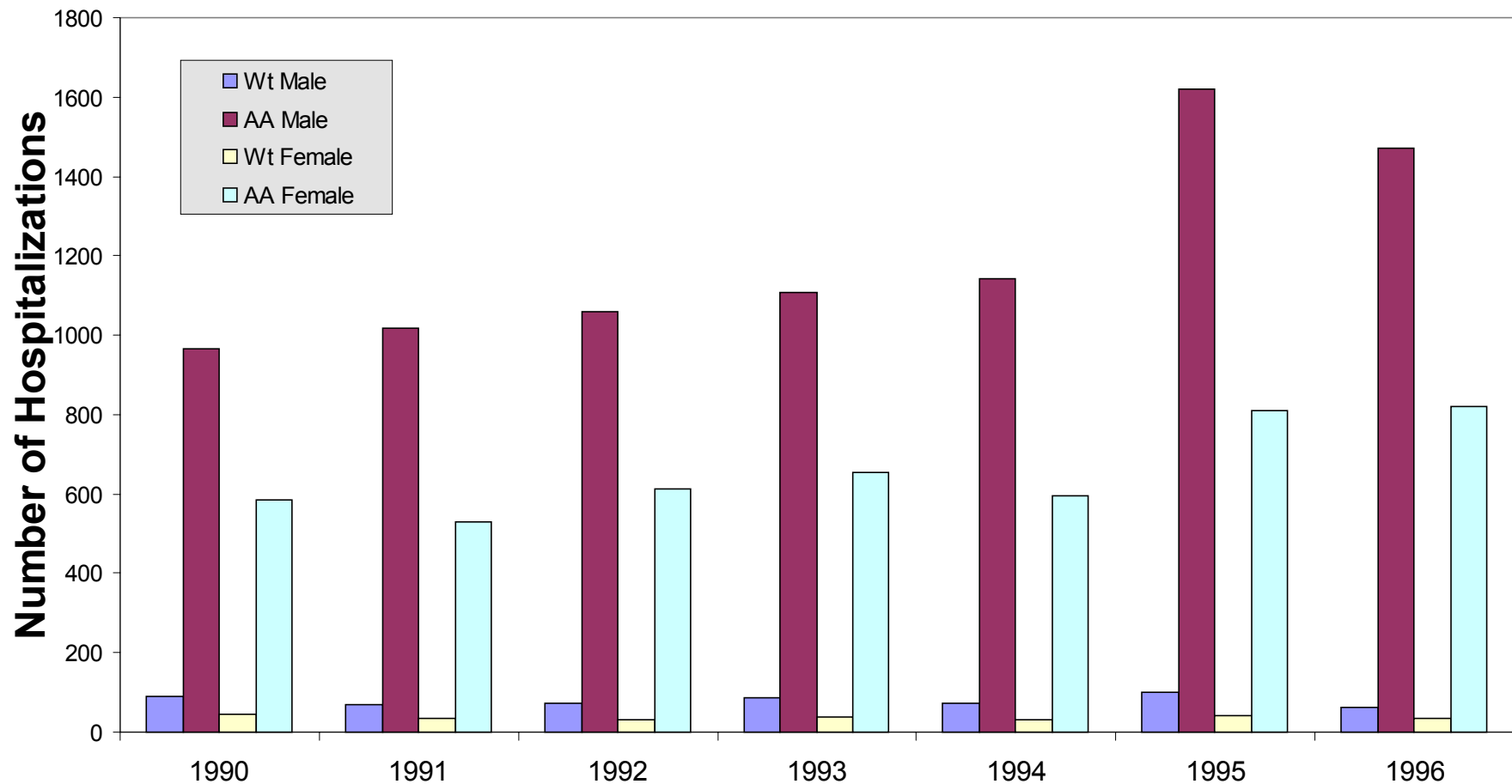
# Methods - Data Sources

- Michigan inpatient data base, 1990-1996
  - **Primary diagnosis ICD-9-CM 493**
  - **May contain more than one admission per patient**
- Michigan resident death file, 1990-1996
  - **Underlying cause ICD-9-CM 493**
- Population estimates for rate calculations based on 1990 census
- Hospitalization rates calculated per 10,000 population
- Childhood asthma defined as asthma in 1-14 year old children

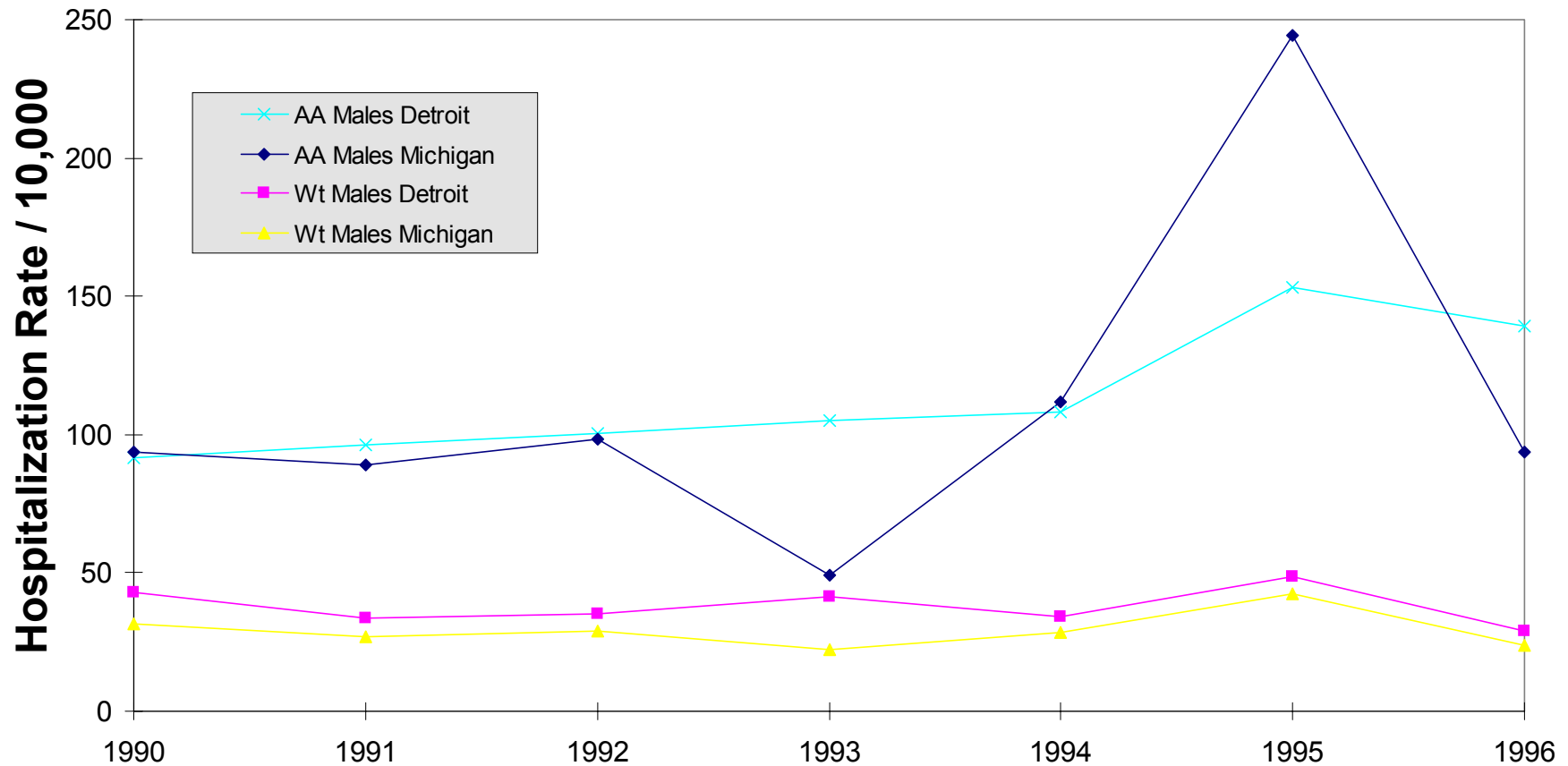
# Results - 1

- From 1990 through 1996, the number and rate of hospitalizations in African-American children increased by approximately 50% in Detroit (Figs. 1-3)
- Hospitalization rates for African-Americans were twice as high as Whites (Figs. 2 and 3)
- Hospitalization rates for males were twice as high as females (Figs. 2 and 3)
- Hospitalization rates by race and gender were similar, however, for Detroit and the remainder of Michigan (Figs. 2 and 3)

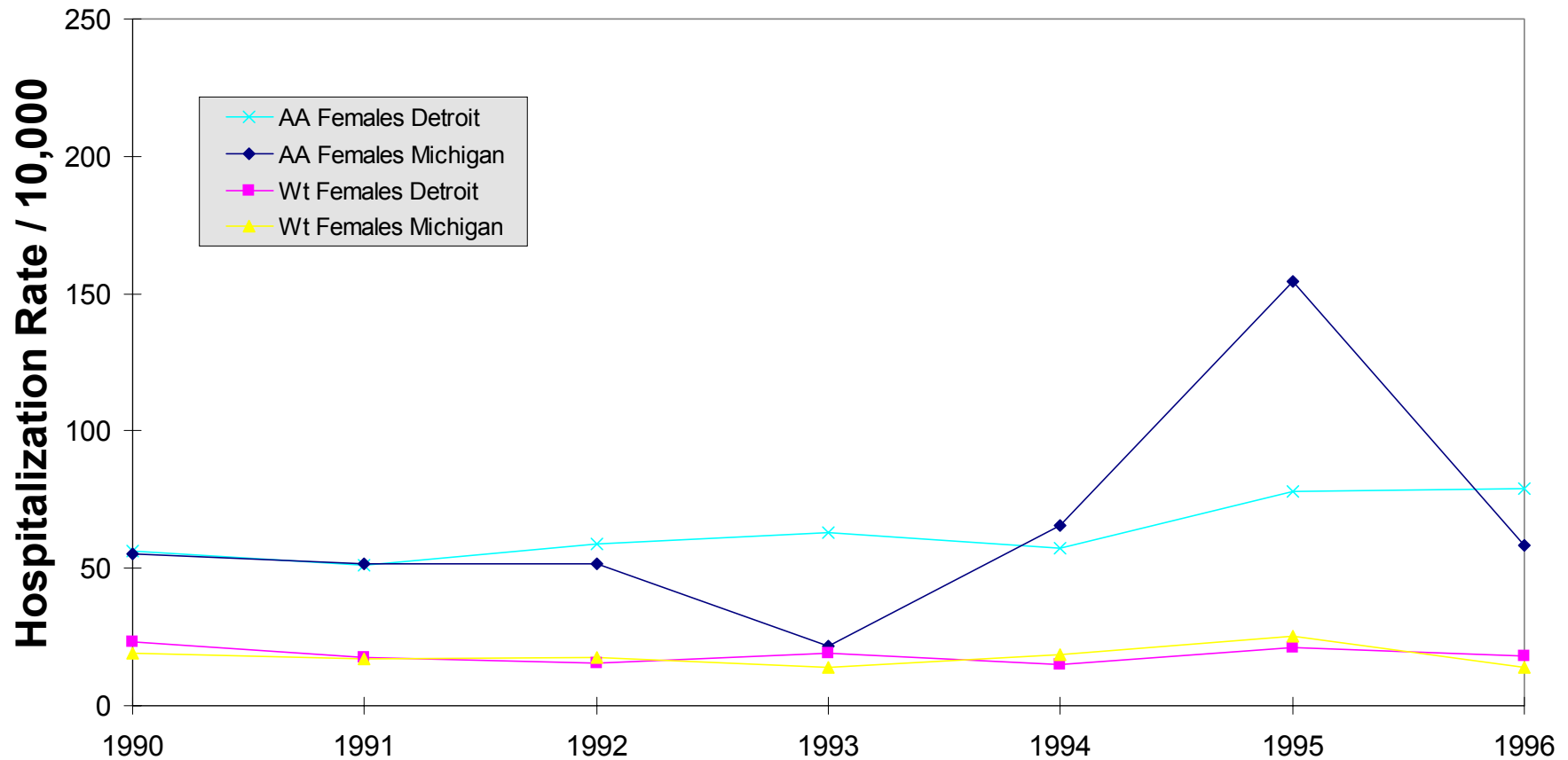
**Figure 1. Average Annual Asthma-Related Hospitalizations for Detroit Children, by Race and Gender, 1990-1996**



**Figure 2. Asthma-Related Hospitalization Rates for Detroit and Remainder of Michigan, Males, by Race, 1990-1996**



**Figure 3. Asthma-Related Hospitalization Rates for Detroit and Remainder of Michigan, Females, by Race, 1990-1996**

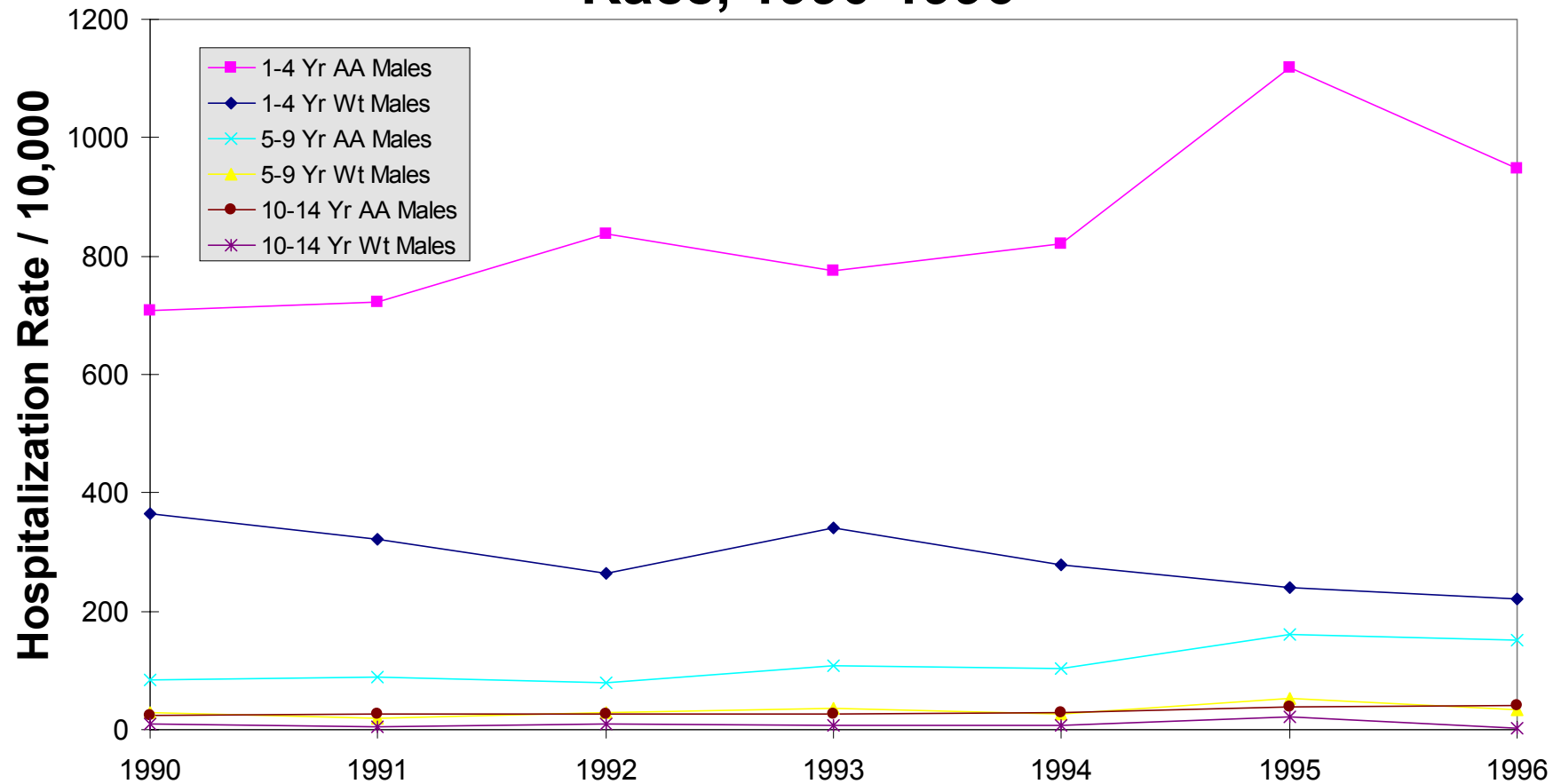




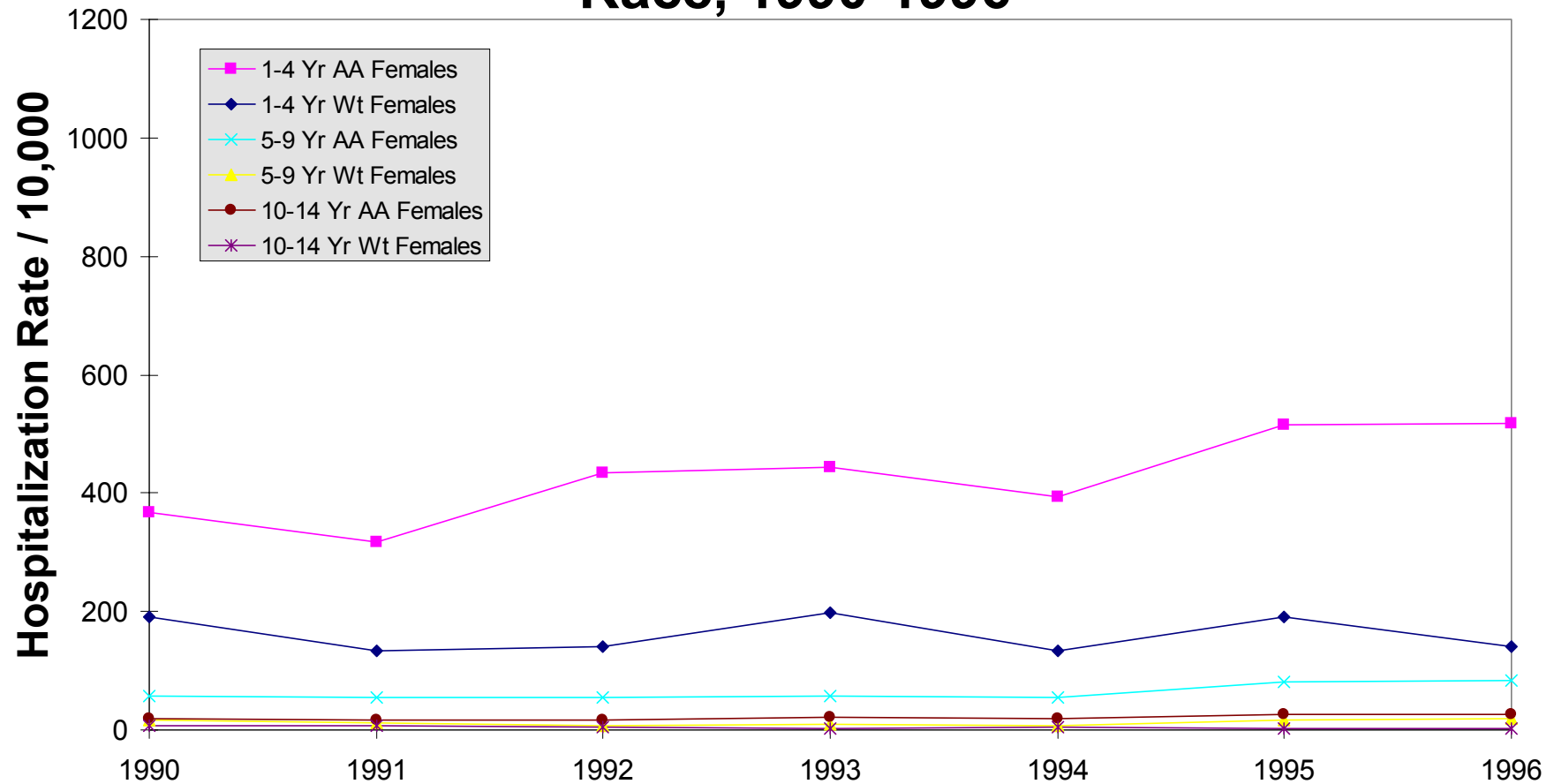
## Results - 2

- Childhood hospitalization rates for 1-4 year old children were six to 10 times higher than the corresponding rates for 5-9 and 11-14 year old children in both males and females (Figs. 4 and 5)
- Average number of hospitalizations per month peaked in October (Fig. 6)
- For the entire State of Michigan, asthma-related mortality rate for African-American children was seven times higher than White children (Fig. 7)

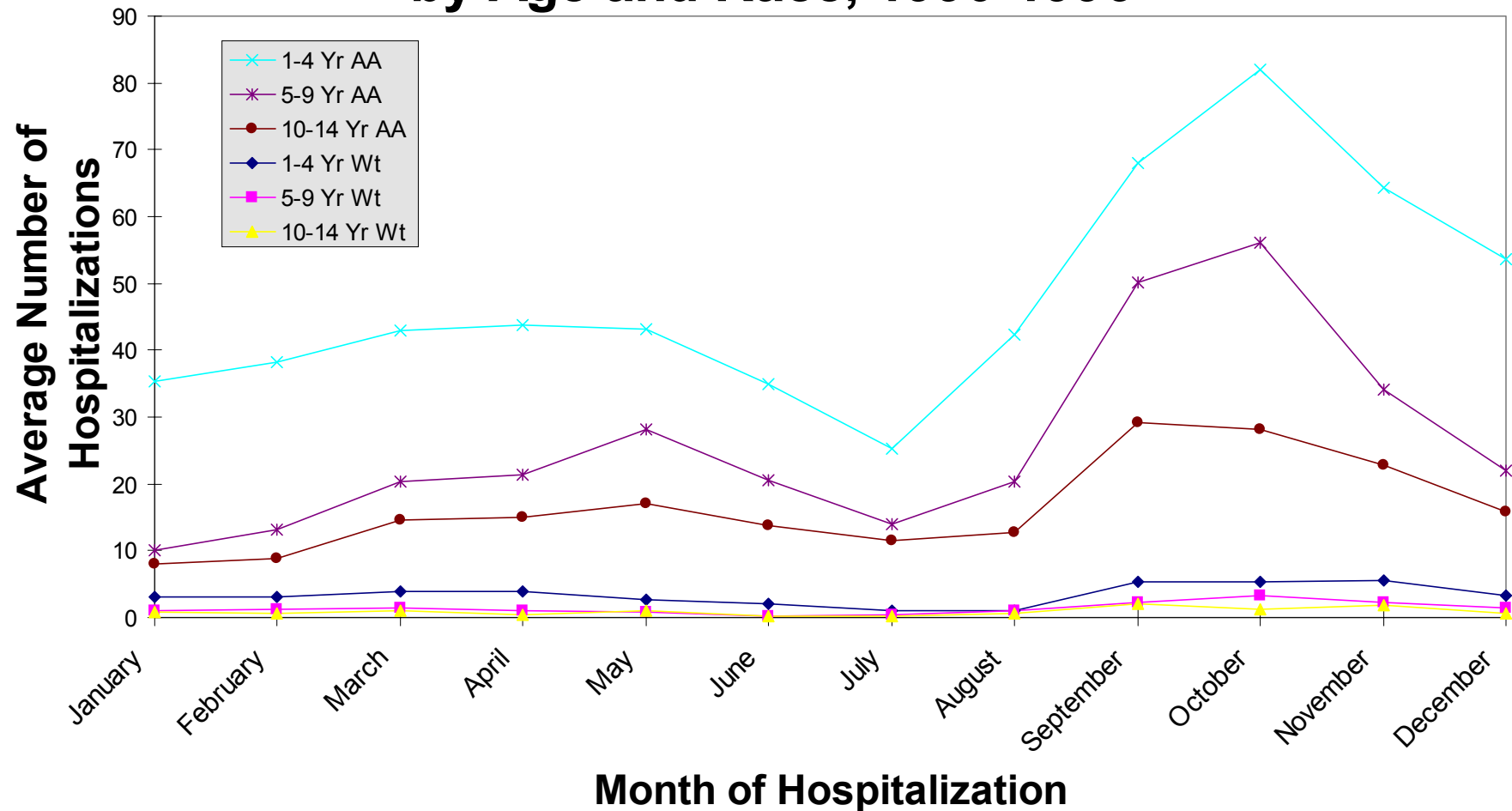
**Figure 4. Asthma-Related Hospitalization Rates for Detroit Male Children, by Age and Race, 1990-1996**



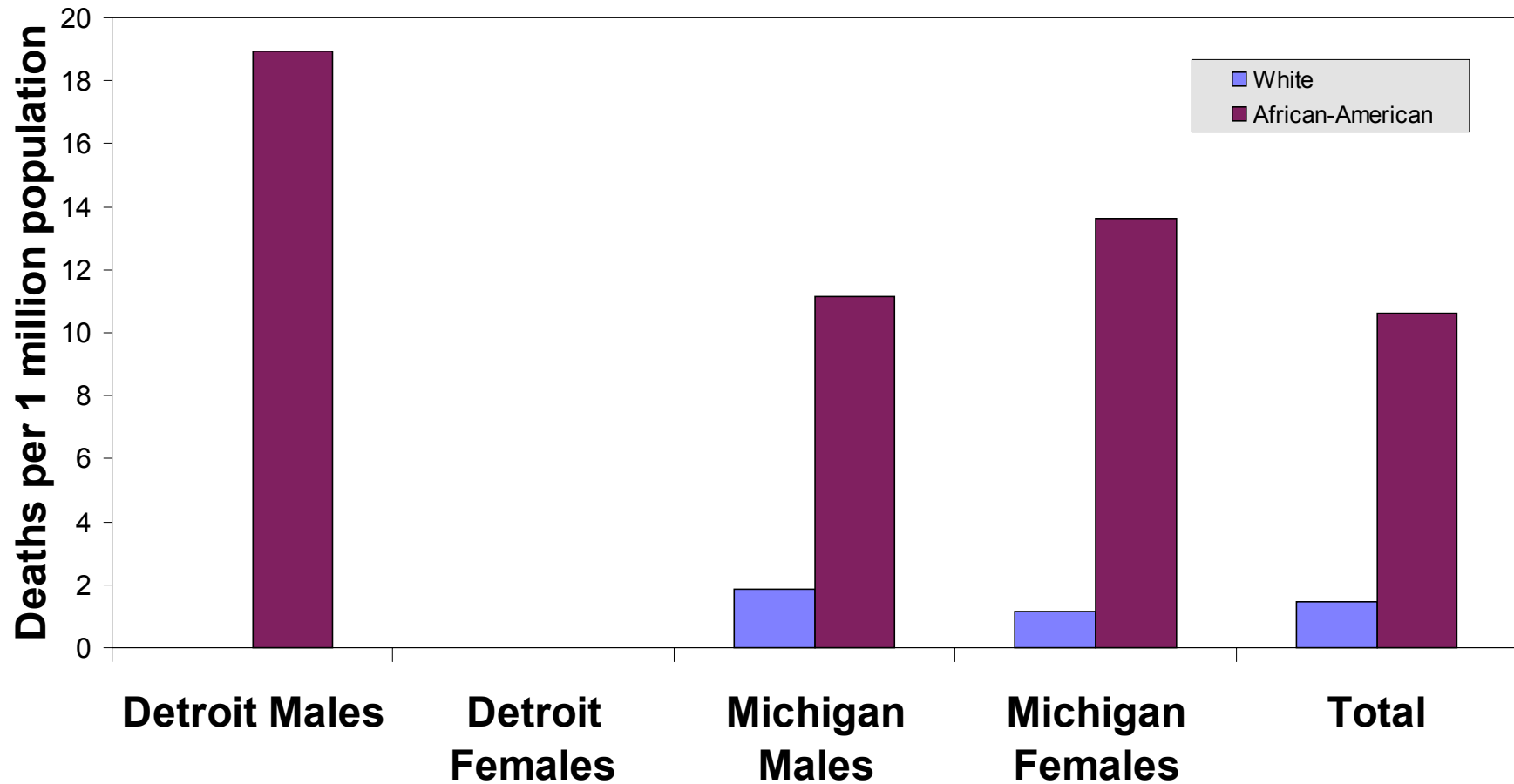
**Figure 5. Asthma-Related Hospitalization Rates for Detroit Female Children, by Age and Race, 1990-1996**



**Figure 6. Average Number of Asthma-Related Hospitalizations per Month for Detroit Children, by Age and Race, 1990-1996**



**Figure 7. Asthma-Related Mortality Rates for Detroit and Remainder of Michigan Children, by Race and Gender, 1990-1996**



# Conclusions

- Study illustrates the high asthma burden, especially in African-American children in the city of Detroit
- Race and gender-specific hospitalization rates were similar in Detroit and the remainder of Michigan
- Seasonal variation in hospitalization could indicate seasonal changes in indoor/outdoor air exposures
- Elevated hospitalization rates for African-Americans in Detroit are typical of other US geographical regions
- Public health response
  - **Detroit Asthma Coalition - local advocate for the asthmatic population of Detroit**
  - **Michigan Asthma Steering Committee - state-level interdisciplinary committee formed to address all aspects of asthma surveillance, education and control**